

Version A Pre-Algebra 2013–2014 Practice Semester 1 Exam

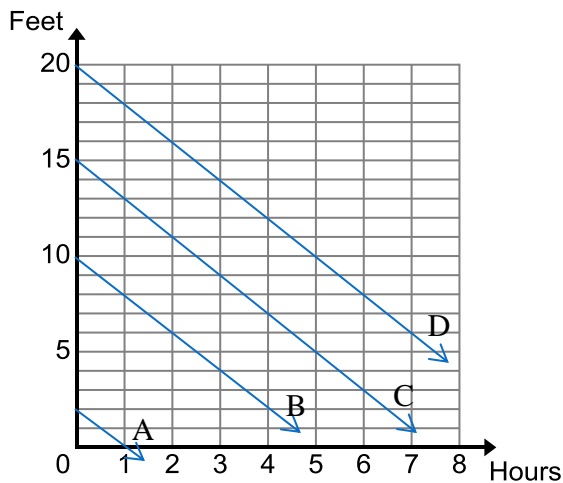
1. Which number is NOT equivalent to $3\frac{2}{3}$?

- (A) $\frac{11}{3}$
- (B) $3\frac{4}{6}$
- (C) $3.\bar{6}$
- (D) 3.6

2. Which fraction is equivalent to 0.375?

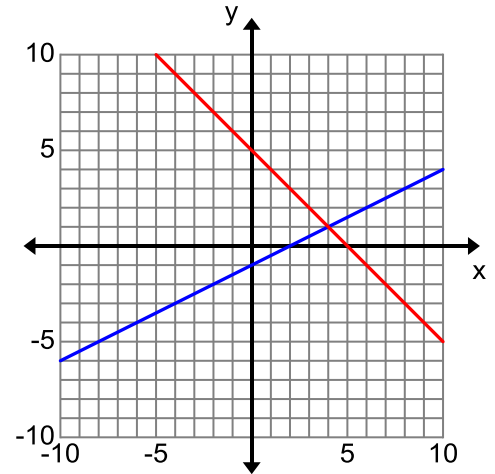
- (A) $\frac{15}{4}$
- (B) $\frac{7}{20}$
- (C) $\frac{3}{8}$
- (D) $\frac{1}{25}$

3. Andy and Bob want to remove a 15 foot block wall. They are able to take the wall down at a rate of 2 feet per hour. Which line best represents how fast the wall is coming down?



- (A) Line A
- (B) Line B
- (C) Line C
- (D) Line D

4. Which ordered pair is a solution of the system graphed?



- (A) (0, -1)
- (B) (0, 5)
- (C) (4, 1)
- (D) (1, 4)

5. What value of x makes the system of equations true?

$$\begin{aligned} y &= 5x - 4 \\ y &= 12 - 3x \end{aligned}$$

- (A) $x = 1$
- (B) $x = 2$
- (C) $x = 4$
- (D) $x = 8$

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6. Currently, Nellie has \$14 in her savings account. She plans to deposit \$5 per week. Her brother currently has \$50 in his savings account and plans to withdraw \$4 per week. How many weeks will it take until both Nellie and her brother have an equal amount of money in their savings accounts?

- (A) 36 weeks
- (B) 27 weeks
- (C) 7 weeks
- (D) 4 weeks

7. Which equation has no solution?

- (A) $4(x - 5) = 4x - 5$
- (B) $2x + 6 - 3x = x + 6$
- (C) $-3(4 + x) = -3x - 12$
- (D) $2x + 1 = 5x + 1$

8. Which expression is equivalent to $(4^3)^2$?

- (A) 4^1
- (B) 4^5
- (C) 4^6
- (D) 4^9

9. What is the value of 100^0 ?

- (A) 0
- (B) 1
- (C) 10
- (D) 1000

10. Write the fraction in simplest form.

$$\frac{24x^4y^2}{16x^5y^4}$$

- (A) $\frac{2x}{3y^2}$
- (B) $\frac{2}{3x^3}$
- (C) $\frac{3}{2xy^2}$
- (D) $\frac{3y^2}{2x}$

11. Complete the equation so that it has infinitely many solutions.

$$-4 + 9(6x - 1) = (Mx + N)$$

- (A) $M = 54$ and $N = 5$
- (B) $M = 54$ and $N = -13$
- (C) $M = 50$ and $N = -9$
- (D) $M = 6$ and $N = -1$

12. Solve for x .

$$.05(x + 1) - 1.5 = 0.3$$

- (A) $x = -26$
- (B) $x = 4$
- (C) $x = 16$
- (D) $x = 35$

13. The length of a football field is written as 3×10^2 units. Which unit best describes this length?

- (A) inches
- (B) feet
- (C) yards
- (D) miles

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14. Which shows how a calculator might display the number 3.8×10^{-14} ?
- (A) $38 \text{ E } 10^{-14}$
 - (B) $38 \text{ E } ^{-14}$
 - (C) $3.8 \text{ E } ^{-14}$
 - (D) $3.8 \text{ E } 10$
15. 6×10^5 is how many times as great as 3×10^2 ?
- (A) 2 times
 - (B) 20 times
 - (C) 200 times
 - (D) 2000 times
16. Tommy and Larry began reading the same book at the same time. Each boy reads at different rates.
- After 3 minutes, Tommy is on page 6.
After 6 minutes, Larry is on page 8.
Who is reading at a greater rate of change?
- (A) Tommy's reading rate which is $1\frac{1}{3}$ pages/min.
 - (B) Larry's reading rate which is $1\frac{1}{3}$ pages/min.
 - (C) Tommy's reading rate which is 2 pages/min.
 - (D) Larry's reading rate which is 2 pages/min.
17. Kate borrows \$450 from her mother and agrees to pay her back the same amount each month without interest. After 5 months she still owes her mother \$360. Choose the linear function that models the amount Kate owed her mother each month since she borrowed the money.
- (A) $y = 360 - 90x$
 - (B) $y = 360 - 18x$
 - (C) $y = 450 - 90x$
 - (D) $y = 450 - 18x$

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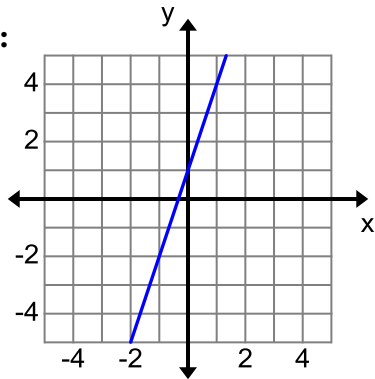
Use the given information to answer the following questions 18-20.

Function 1:

x	0	1	2	3
y	-3	0	3	6

Function 2: $y = 3x + 5$

Function 3:



18. What is the y-intercept for Function 1?
 (A) -3
 (B) 0
 (C) 3
 (D) 6
19. Which function has a greater rate of change?
 (A) Function 1
 (B) Function 2
 (C) Function 3
 (D) All are the same
20. Which function is a proportional relationship?
 (A) Function 1
 (B) Function 2
 (C) Function 3
 (D) None

21. The table shows points on a line.

x	3	1	-3	-9	-11
y	-3	1	9	21	25

What are the y-intercept and rate of change of the line?

- (A) y-intercept = 3
Rate of change = -2
- (B) y-intercept = 4
Rate of change = -4
- (C) y-intercept = 8
Rate of change = 8
- (D) y-intercept = -1
Rate of change = 12
22. What is 3.46×10^5 written in standard form?
 (A) 0.00000346
 (B) 0.0000346
 (C) 346,000
 (D) 34,600,000
23. What is 0.00039 written in scientific notation?
 (A) 3.9×10^{-4}
 (B) 3.9×10^{-3}
 (C) 3.9×10^3
 (D) 3.9×10^4

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24. How many solutions does the following system of equations have?

$$\begin{aligned} 3(2x + 6) &= y \\ 2(3x + 9) &= y \end{aligned}$$

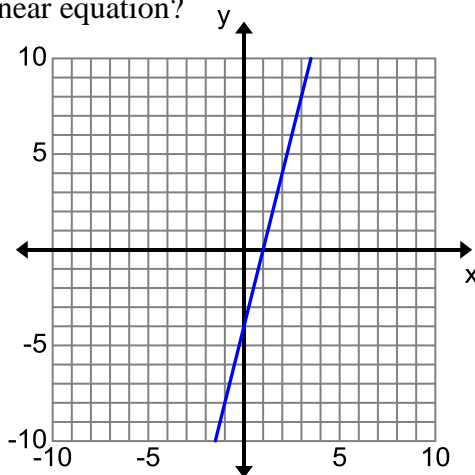
- (A) One solution
- (B) Two solutions
- (C) Infinite solutions
- (D) No solutions

25. What ordered pair satisfies both equations?

$$\begin{aligned} y &= 2x + 3 \\ y &= -3x - 2 \end{aligned}$$

- (A) (2, 7)
- (B) (1, 5)
- (C) (-1, 1)
- (D) (-2, 1)

26. Given the graph of the line, what is the correct linear equation?



- (A) $y = 4x + 1$
- (B) $y = -4x + 1$
- (C) $y = \frac{1}{4}x - 4$
- (D) $y = 4x - 4$

27. Solve for a.

$$\frac{3}{4} + \frac{4a}{7} = \frac{6a}{7} + \frac{7}{8}$$

- (A) $a = -\frac{13}{16}$
- (B) $a = -\frac{7}{16}$
- (C) $a = \frac{7}{16}$
- (D) $a = \frac{49}{80}$

28. Classify these numbers by selecting all that apply.

$$\sqrt{2}, \sqrt{3}, \frac{\sqrt{7}}{2}$$

- I. Integer
 - II. Irrational
 - III. Rational
 - IV. Real
- (A) III and IV
 - (B) II and IV
 - (C) IV only
 - (D) II only

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29. Which of the following representations are linear functions.

I.

$$\{(2,7)(6,4)(0,3)(3,6)(1,5)\}$$

II.

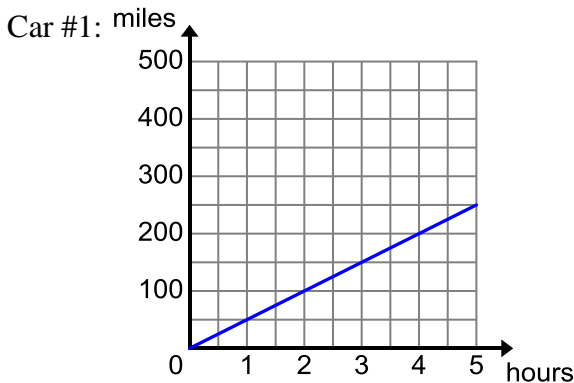
$$y = 2^x$$

III.

Input	-3	0	3	6	9
Output	-4	-3	-2	-1	0

- (A) I only
- (B) III only
- (C) II and III
- (D) I and III

30. Which car is traveling at a faster rate?

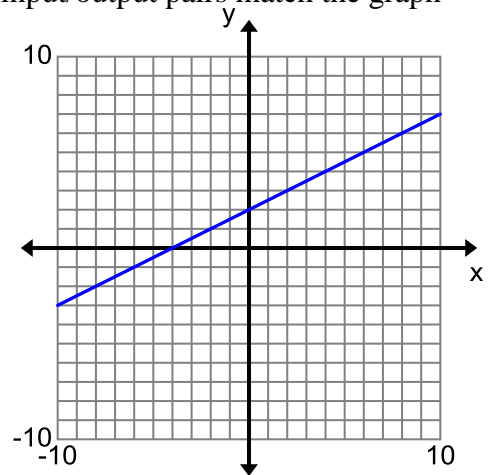


Car #2:

Hours	Miles driven
2	110
4	220
6	330

- (A) Car #1
- (B) Car #2
- (C) They are the same.

31. Which input/output pairs match the graph below.



- (A) $\{(2, 0), (0, 4), (4, 4), (-2, 1),\}$
- (B) $\{(0, 2), (-4, 0), (4, 4), (-2, 1),\}$
- (C) $\{(2, 0), (0, 4), (4, 4), (2, -1),\}$
- (D) $\{(0, 2), (4, 0), (4, 4), (2, -1),\}$

32. The population of the southwest states, California, Nevada and Arizona are as follows.

California	3.8×10^7
Nevada	2.7×10^6
Arizona	6.6×10^6

What is the total population of the three states the make up the southwest?

- (A) 1.31×10^6
- (B) 1.31×10^7
- (C) 4.73×10^7
- (D) 4.73×10^6

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33. Which of the following tables represent functions?

I.

Input	Output
1	5
2	5
3	5
4	5

II.

Input	Output
2	1
8	7
6	5
4	3

III.

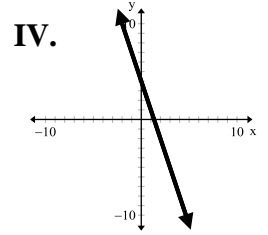
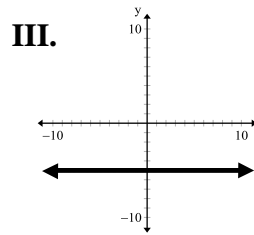
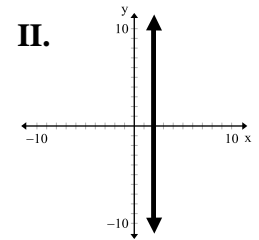
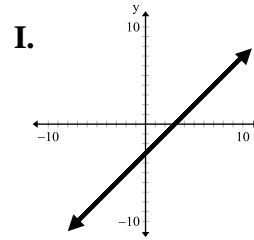
Input	Output
5	1
5	2
5	3
5	4

IV.

Input	Output
9	10
6	7
9	8
0	1

- (A) II only
- (B) I and II only
- (C) II and IV only
- (D) III and IV only

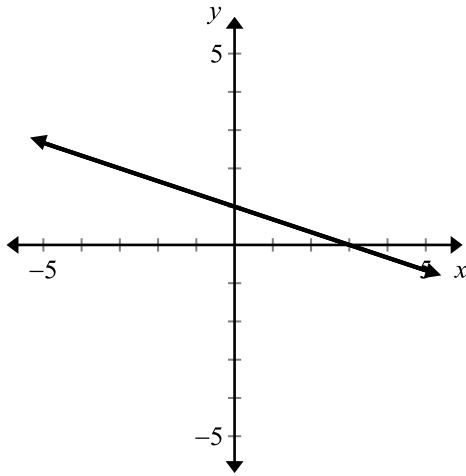
34. Which of the following graphs represent functions?



- (A) II only
- (B) I and IV only
- (C) I, III, and IV only
- (D) I, II, III and IV

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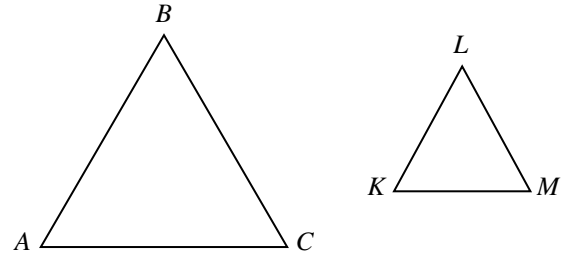
35. Use the graph:



What is the equation of the line in the graph?

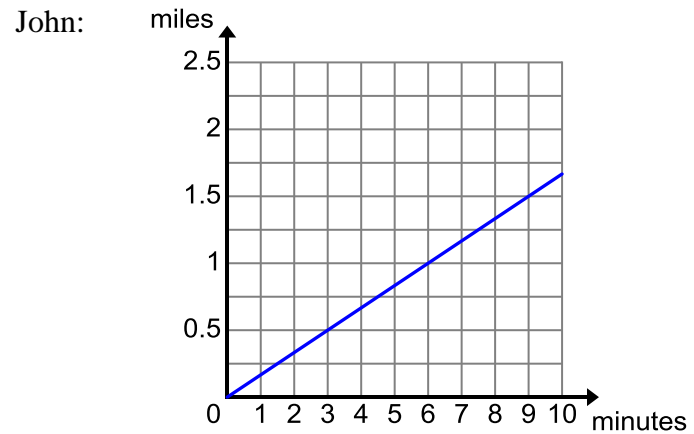
- (A) $y = -\frac{1}{3}x + 1$
- (B) $y = -\frac{1}{3}x + 3$
- (C) $y = -3x + 1$
- (D) $y = -3x + 3$

36. Triangle ABC is similar to triangle KLM where the ratio of proportionality is $\frac{2}{3}$, and $AB = 12$ centimeters. What is KL ?



- (A) 2 cm
- (B) 4 cm
- (C) 8 cm
- (D) 24 cm

37. Which boy had the fastest race time?



Carlos:

$$y = \frac{1}{6}x$$

x is time in minutes
 y is miles

- (A) John
- (B) Carlos
- (C) They are the same.

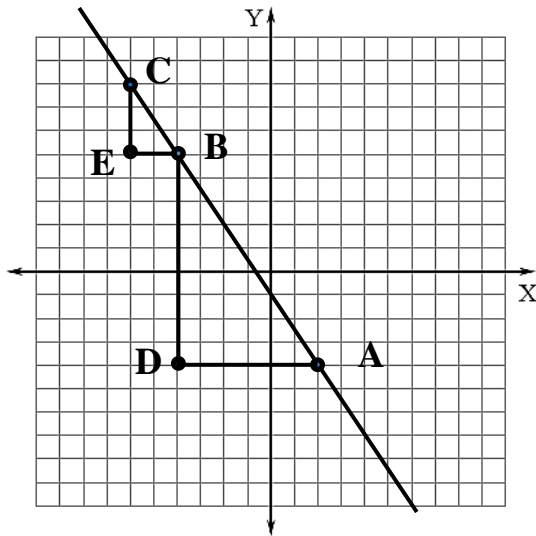
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38. For which equation is the set of ordered pairs a solution?

$$\{(-4, 3), (2, 0), (0, 1), (-2, 2)\}$$

- (A) $y = -2x$
- (B) $y = 3x + 1$
- (C) $y = -2x + 1$
- (D) $y = -\frac{1}{2}x + 1$

39. In the diagram, \overline{AB} is the hypotenuse of the right triangle ABD and \overline{BC} is the hypotenuse of the right triangle BCE.



Which statement(s) are true?

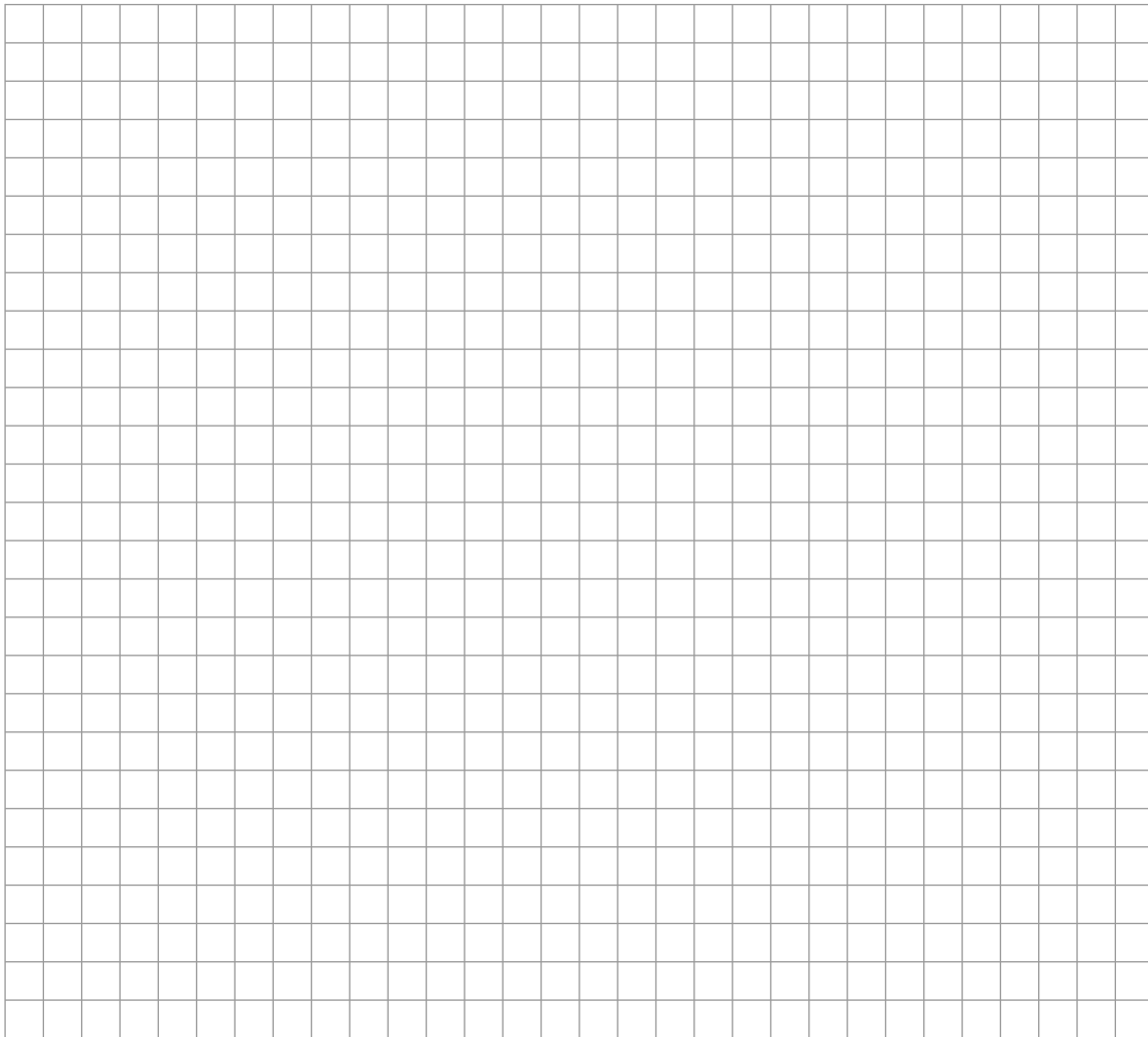
- I. $\frac{CE}{CB} = \frac{BD}{DA}$
 - II. $\triangle ABD$ is similar to $\triangle BCE$.
 - III. The slope of \overline{CB} is less than the slope of \overline{BA} .
- (A) I and II only
 - (B) II and III only
 - (C) II only
 - (D) III only

Practice A Pre-Algebra 8 2013–2014 Semester 1 Exam Free Response

1. The table shows the approximate populations of several countries in 2009.

Country	Population
India	1,205,000,000
Japan	128,000,000
Russia	14.3×10^8
China	7.11×10^9

- (a) Express the population of India in scientific notation.
- (b) Express the population of China in standard notation.
- (c) List the populations of all four countries from least to greatest. Explain how you got your answer.



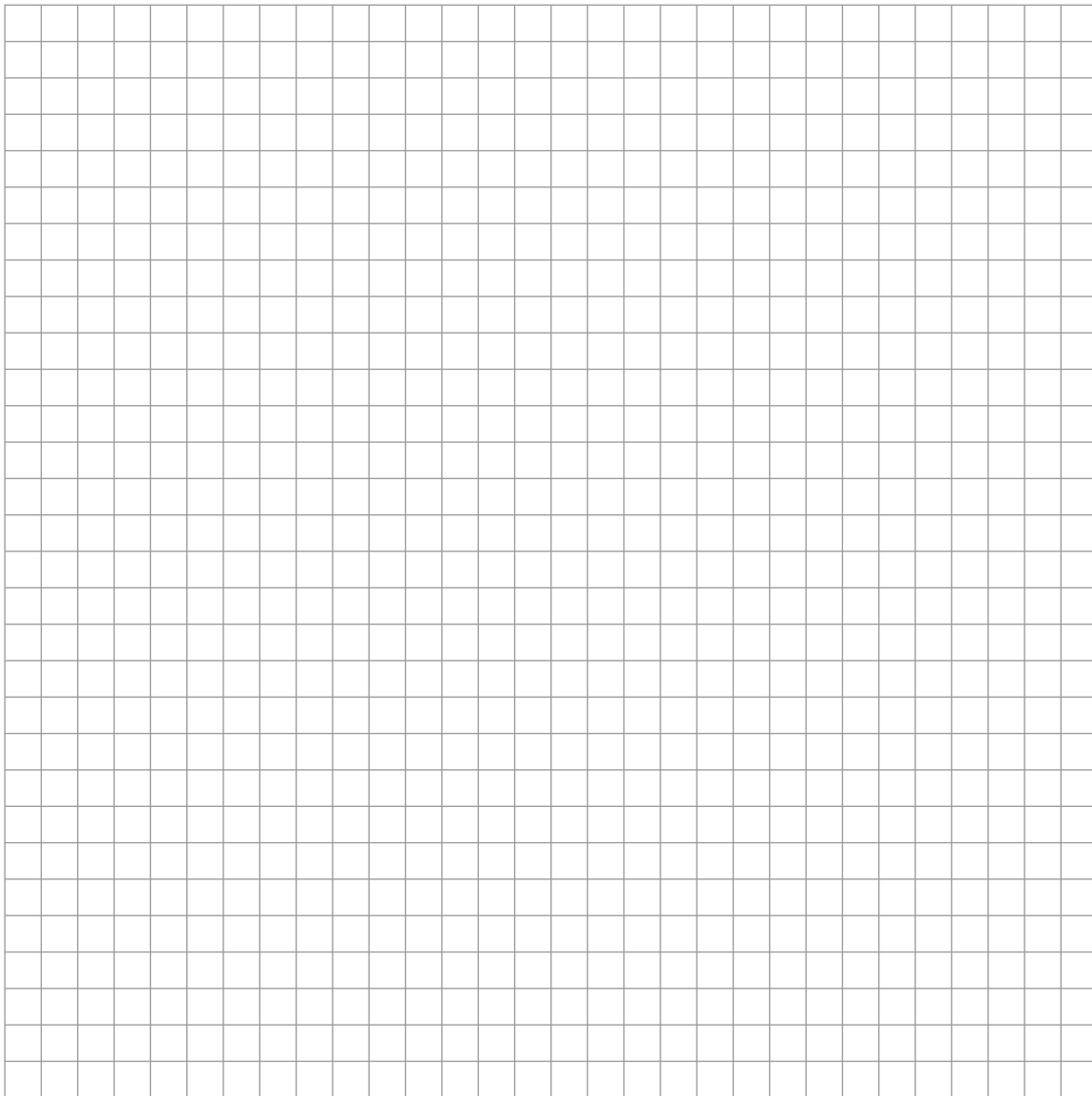
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2. Arty's Arcade has two different plans:

Option One: \$1.25 per game

Option Two: \$15 at the door and \$0.50 per game

- (a) Let T = amount spent at the arcade and g = number of games played. Write linear equations to model Option One and Option Two.
- (b) Graph Option One and Option Two in a coordinate plane.
- (c) After how many games played will the amount spent for both options be equal? Show your work to support your answer.



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3. Explain whether $\sqrt{3}$ is rational or irrational and why.

